

SUGARCANE RUST IN THE WESTERN HEMISPHERE

C. P. Seymour, J. W. Miller, and C. L. Schoulties

The first authenticated report of sugarcane rust (*Puccinia kuehnii* (Krug.) Butl.) in the western hemisphere was reported on sugarcane (interspecific hybrids of *Saccharum*) in 1978 from the Dominican Republic (5). However, a publication which lists the worldwide distribution of this pathogen indicates an earlier presence of the pathogen in Cuba (1). Sugarcane rust has been attributed to both *P. kuehnii* and *P. erianthi* Pad. Kahn in the eastern hemisphere with the latter recognized only in India and China (2). *P. kuehnii* is widespread on sugarcane and related grasses in Africa, Asia, Australia, India, and islands of the Pacific (1). Subsequent to the Dominican Republic report, outbreaks of sugarcane rust have occurred in Jamaica (J. L. Dean, personal communication) and in Puerto Rico (L. Liu, personal communication). Rust authorities (F. G. Pollack, J. F. Hennen, and G. B. Cummins, personal communications) in the United States have examined specimens from the Dominican Republic, Jamaica, and Puerto Rico and have identified the rust pathogen as *P. melanocephala* Syd. These authorities now regard *P. erianthi* to be synonymous with *P. melanocephala*.

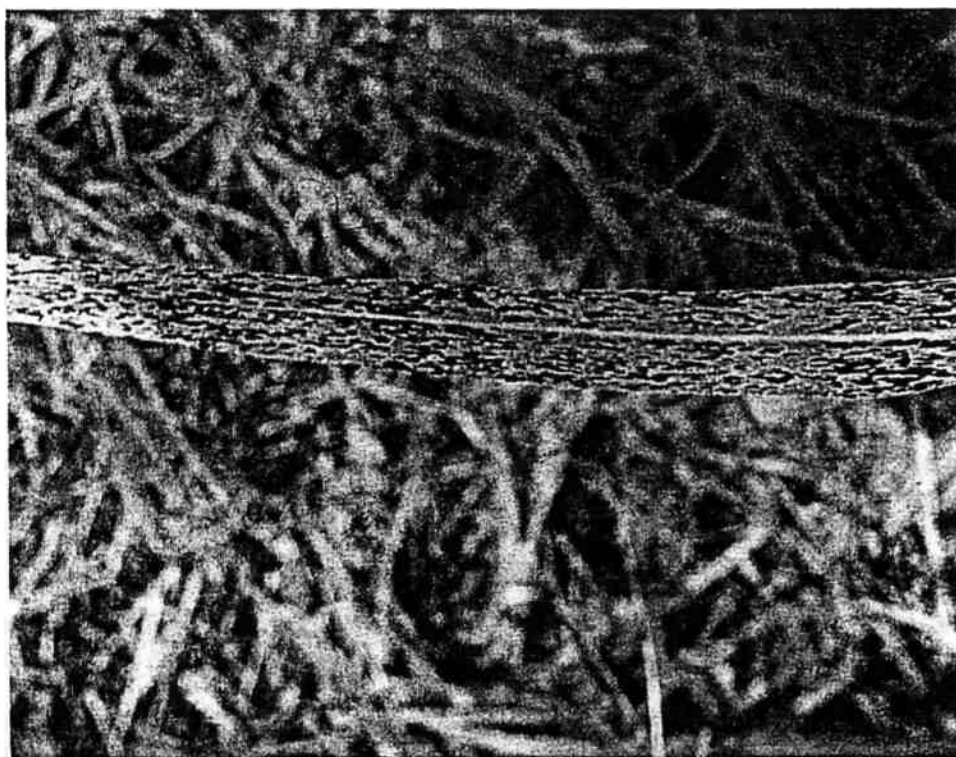


Fig. 1. Rust on sugarcane showing a closeup of an infected leaf with individual lesions. (Photo courtesy of Institute Superior de Agricultura (ISA), Santiago, Dominican Republic)

While the taxonomy of this pathogen seems confusing, the name of the pathogen need not be the major concern of the sugarcane industry. For the present, information on the symptoms that the rust presents, the damage caused, and how the rust may be controlled would seem to be appropriate concerns.

SYMPTOMS. The initial symptoms of infection are minute, elongated, yellow leaf spots. The spots increase in size up to 1.5 mm in diameter and usually turn brown to orange. The lesions occur irregularly and sometimes have a purplish appearance (2, 3). The spots are raised and are surrounded by a pale yellow halo. The raised pustules are formed predominantly on the undersurface of the leaves, and the urediospores formed therein are orange to orange-brown (fig. 1). When the disease is severe, lesions coalesce, forming large, irregular, necrotic areas, resulting in death even of young leaves (2).

DISSEMINATION AND DISEASE DEVELOPMENT. Spread of this rust occurs primarily by wind and water-splash movement of urediospores from uredia (pustules) to new infection sites (1). The movement of diseased vegetative parts of sugarcane, contaminated equipment, and workers from one location to another may also provide a means of spread. Rust severity usually intensifies with high rainfall, humidity, and temperature (5). The pathogen has eliminated highly susceptible varieties in Australia, Fiji (2), and India (4), whereas other less susceptible varieties may show a reduction in yield.

CONTROL. The use of resistant varieties is the best method for controlling this potentially serious disease. Florida varieties being tested in Jamaica for resistance to smut, *Ustilago scitaminea* Syd. have shown resistance and susceptibility to this new rust (J. L. Dean, personal communication). While some fungicides (Ferbam, Ziram, and 'Spersul' (water dispersible sulfur)) have shown some promise in controlling the rust pathogen when applied on a monthly basis (2), no fungicides are registered by the United States government to control this pathogen. Biological control, at least to some degree, may be possible as the urediospores have been found parasitized by the fungus hyper-parasite *Darluca filum* (Biv.-Bern. ex FR) Cast. (2, 6).

REFERENCES CITED.

1. Commonwealth Mycological Institute. 1969. *Puccinia kuehnii* Butler. Distribution maps of plant diseases. Map 215. Ed. 3. 2p.
2. Egan, B. T. 1964. Rust. pp. 61-68. In C. G. Hughes, E. V. Abbott, and C. A. Abbott (Eds.), *Sugar-cane diseases of the world*. Elsevier Publ. Co., Amsterdam, Vol. 2.
3. Laundon, G. F., and J. M. Waterson, 1964. *Puccinia kuehnii*. Descriptions of pathogenic fungi and bacteria. No. 10. Commonwealth Mycological Institute, Kew, Surrey, England. 2p.
4. Padmanabhan, S. Y., and S. A. Rafay. 1942. Two new reports of fungi on *Saccharum officinarum* and *S. arundinaceum*. *Curr. Sci.* 4:150-152. (Rev. Appl. Mycol. 21:472, 1942)
5. Presley, John T., Raul Perdomo, and J. D. Ayats. 1978. Sugarcane rust found in Dominican Republic. *Plant Dis. Reptr.* 62(10):843.
6. Vasudeva, R. S. 1956. Some diseases of sugar cane newly found in India. *F.A.O. Plant Prot. Bull.* 9:129-131. (Rev. Appl. Mycol. 36:212, 1957)